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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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GROUP 2800

Application Number: 10/678,489
Filing Date: October 03, 2003
Appellant(s): GOUDARZI ET AL.

Larry G. Brown
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08/01/07 appealing from the Office action mailed 08/03/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,346,118,	DEGANI, ET AL	09-1994
6,150,717	WOOD, ET AL	11-2000
5,539,153	SCHWIEBERT, ET AL	07-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 7-9, 15-17 and 20 are rejected under 35 U. S. C. 102(b) as being anticipated by Degani et al. (US Pat. 5,346,118, hereinafter Degani).

Regarding claims 7-9, 16, 17 and 20, Degani discloses in figs. 2-5 a module, comprising: a first substrate 11 comprised of a first material (col. 2, lines 59-61); at least a second substrate 10 comprised of at least a second material; solder of a first composition 12 residing between the first substrate 11 and at least the second substrate 10 on a first area; and solder of at least a second composition 12 residing between the first substrate 11 and at least the second substrate 10 on a separate area from the first area such that the solder of the first composition and the solder of second composition (next to the first solder) are vertically separated; wherein the solder of the first composition 12 and the solder of the second composition 12 are in a collapsed state (col. 3, lines 11-15&36-40 and figs. 3-5).

Regarding claim 15, Degani discloses in fig 1, 4 and col. 2, line 59-col. 3, line 7 the module is a ball grid array package.

Claims 7-10, 12 and 14-20 are rejected under 35 U. S. C. 102(b) as being anticipated by Wood et al. (US Pat. 6,150,717, hereinafter Wood).

Regarding claims 7, 8, 10, 12, 14, 16, 17 and 20, Wood discloses in figs. 11-11E a module 92, comprising: a first substrate 10M comprised of a first material (DDC/PCB); at least a second substrate 94 comprised of at least a second material (ceramic); solder of a first composition 12M/96 residing between the first substrate 10M and the second substrate 94 on a first area; and solder of a second composition 12M/96 residing between the first substrate 10M and at least the second substrate 94 on a separate area from the first area (col. 8, line 63-col. 9, line 22) such that the solder of the first composition and the solder of second composition (next to the first solder) are vertically separated (fig. 11B); wherein the solder of the first composition 12/18 and the solder of the second composition 12/18 are in a collapsed state (figs. 11A-11C and col. 9, lines 63-64).

Regarding claim 9, Wood discloses the first substrate is comprised of a printed circuit board material having a coefficient of thermal expansion (col. 2, lines 48-51) and the second substrate is a ceramic material having a different coefficient of thermal expansion (col. 9, lines 23-24).

Regarding claim 10, Wood discloses the selectively applied solder of the first composition 12M has a higher melting point solder than the selectively applied solder of the second composition 96 (col. 9, lines 7-22).

Regarding claim 15, Wood discloses the module is a ball grid array package (col. 2, lines 42-44).

Regarding claims 18 and 19, Wood discloses the step of selectively applied solder of the first composition 12M is applied to a substantially centrally located area on at least one among the first substrate and the second substrate and the selectively applied solder of at least the second composition 96 is applied to a substantially peripherally located area about the centrally located area, wherein the solder of the first composition 12M has a higher melting point than the second composition 96 (col. 9, lines 7-22).

(10) Response to Argument

A. The "product by process" rejection

The examiner agrees that claim 7 does not constitute a "product by process". Therefore, the "product by process" rejection no longer applies to pending claim 7.

B. Degani

The recitations of Degani do not render the invention of claims 7, 8, 15-17 and 20 unpatentable.

Appellant begins the arguments by stating that "Degani does not describe the placement of solder of different compositions in different areas between the IC package (10) and the board (11)" *Brief*, p. 5. It is noted that the feature upon which Appellant relies (i.e., the solder of different compositions) is not recited in the rejected claim(s). The claim merely refers to the "first composition" and the "second composition". This does not necessarily mean that the first and second compositions must consist of two different compositions. Degani, in figs. 3-4 and col. 3, lines 31-40 teaches that the first solder composition12 and the solder of the second solder composition 12 (next to the first solder) are vertically separated; wherein the solder of the first composition 12 and the solder of the second composition 12 are in a collapsed state (i.e., melt and re-solidify) (col. 3, lines 36-40). Therefore, the rejection is maintained.

Appellant next argues that "Degani never discusses the issue of different coefficients of thermal expansion (CTE) between various substrates." *Brief*, p. 5. However, these arguments are not commensurate with the scope of the claim. It is noted that the features upon which Appellant relies (i.e., different coefficients of thermal expansion (CTE) between various substrates) are not recited in the rejected claim 7. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, applicant's arguments are not persuasive and the rejection is proper.

C. Wood

The recitations of Wood do not render the invention of claims 7-10, 12 and 14-20 unpatentable.

Appellant argues that "Wood does not describe the placement of solder of different compositions in different areas between the die (IOM) and the supporting substrate such that the different compositions are vertically separated." This argument is not convincing, especially since Wood teaches in figs. 11A-11C a module 92, comprising: solder of a first composition 12M on a first area (fig. 11A and col. 9, lines 9-11); and solder of a second composition 96 on a separate area from the first area such that the solder of the first composition 12M and the solder of second composition 96 (next to the first solder) are vertically separated (fig. 11B); wherein the solder of the first composition 12M and the solder of the second composition 96 are in a collapsed state (i.e., the bump 12M and 96 can be reflowed to form bonded connections 106) (col. 9, lines 63-64). Therefore, Wood, as indicated in the above rejection, clearly discloses the claimed features.

Appellant argues that Wood does not address the issue of mismatching CTEs. However, these arguments are not commensurate with the scope of the claim as the argument imports limitations from the specification into the claim in such a way that is expressly prohibited. *In re Morris*, (127 F.3d 1048 (Fed. Cir. 1997). Alternatively, the argument is incorporating the limitations of claim 9 into claim 7. However, the canons of claim construction require that claim 9 be interpreted as expressly absent from those limitations. Moreover, Wood also teaches that the first substrate is a printed circuit board material (PCB) (col. 2, lines 48-51) and the second substrate is a ceramic material (col. 9, lines 23-24); as these materials are distinct and different from each other, it follows that they would also possess different CTEs. Therefore, applicant's arguments are not persuasive and the rejection is proper.

Appellant argues that Wood does not disclose the concept of solder of a first composition, which is in a substantially centrally-located area, having a higher melting point than solder of a second composition, which is in a substantially peripherally-located area. This argument is not convincing, as Wood teaches that the solder of the first composition 12M has a higher melting point than the solder of the second composition 96 (col. 9, lines 20-22); and in figs. 11A-11C, the solder of the first composition 12M is in a substantially centrally located area;

and the second composition 96 is in a substantially peripherally located area. Therefore, Wood, as indicated in the above rejection, clearly discloses claimed features.

D. Schwiebert

The examiner agrees the Schwiebert rejection to previous claims no longer applies to the pending claims 7-10, 12, 14-17 and 20.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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